What is an online 'preliminary version' of a publication in the meaning of Article 9.9 of the Code?—One more step on the trail of the Asian elephant

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Abstract. Gentry et al. (2014) challenged our statement (Dubois et al., 2014) that the lectotype designation of *Elephas maximus* by Cappellini et al. was not nomenclaturally available from the first online publication in 2013 of a 'preliminary version' of their work but only from the publication in 2014 of a 'final version' of it. The question at stake here is the meaning of the term 'preliminary version' in Articles 9.9 and 21.8.3 of the Code. This question is discussed in detail here and we conclude that any version of a work published online and which differs, even slightly (by even a single-letter or a single modified element of layout), in content and/or layout from the final version of the same work subsequently published online, is to be considered a 'preliminary version' of this work. A preliminary version is accessible online only during a limited period, before being definitively replaced by the final version, which then remains unchanged. Such preliminary versions are not available for nomenclatural purposes. In Appendix 1, we also reply to some other comments of Gentry et al. (2014) on the paper by Dubois et al. (2014).

Cappellini et al. wrote a paper discussing the status of the syntypes of the nominal species *Elephas maximus* Linnaeus, 1758 (Mammalia) and designating a lectotype among them. Dubois et al. (2014) commented on this work, and Gentry et al. (2014) published a rebuttal to their paper. As their comments clearly include misunderstandings but were published in this *Bulletin*, we feel compelled to revisit several of the problems raised by these works. However, most of their comments deal with minor points and will be replied to in the Appendix 1 of the present paper, the focus of which is put on a very important point, i.e. the status of online 'preliminary versions' of publications.

An electronic version of the paper by Cappellini et al. had been published online 'ahead of print' by the *Zoological Journal of the Linnean Society* ('ZJLS' below) on 4 November 2013. The content of this paper had later been included in the issue **170**(1) of this journal published both in print and online on 14 January 2014 according to the ZJLS website. Dubois et al. (2014) stated that the electronic version of this paper distributed online ahead of print (Cappellini et al., 2013) did not meet the requirement for nomenclatural availability of the nomenclatural act it contains (the lectotype designation), and that this act became nomenclaturally effective only with the publication of the issue **170**(1) of ZJLS (Cappellini et al., 2014). Gentry et al. (2014) claimed that this was wrong and that the lectotype designation was available from the original online publication, the latter having been duly registered in Zoobank, as required by Article 8.5.3 of the current Code. We disagree with this statement, for the reasons given below.

Our interpretation relies on a strict application of Articles 8.1, 9.9 and 21.8.3 of the Code.

Article 8.1 states that, to be regarded as published in the frame of zoological nomenclature, a work '*must be issued for the purpose of providing a public and permanent scientific record*', and that '*it must have been produced in an edition containing simultaneously obtainable copies by a method that assures* (. . .) *widely accessible electronic copies with fixed content and layout*.' The format PDF/A is given as an example of '*a file format that allows content and layout to be preserved unchanged*.' It is quite clear that, according to this Article, a work not intended to provide a *permanent* scientific record, or prone to be *modified* subsequent to its first publication, is not available in zoological nomenclature. The formula '*with fixed content and layout*' must be interpreted strictly, which means that any subsequent change in the content (even of a single letter) or in the format (place or aspect of any printed element in the page) disqualifies the original document as a publication available in zoological nomenclature.

Article 9.9 states that '*preliminary versions of works accessible electronically in advance of publication*' do not constitute published work within the meaning of the Code. This is repeated differently in Article 21.8.3: '*Some works are accessible online in preliminary versions before the publication date of the final version. Such advance electronic access does not advance the date of publication of a work, as preliminary versions are not published*'. However, the Glossary of the Code fails to provide a definition of '*preliminary version*'. Dubois et al. (2013) gave detailed information on a number of cases of recent online early publications which were quite different in various respects from the final publications of the same works and no doubt qualify as '*preliminary versions*'. The changes sometimes concern large parts of the text, sometimes the figures, the layout, etc. But there is no need for such big changes to justify the use of the term '*preliminary version*' for online early documents, as we will see below.

As shown in Figures 1–2, the two documents at stake in this case (Cappellini et al., 2013 and 2014), although they bear the same DOI (10.1111/zoj.12084), are different. The 2013 PDF is paginated at the top of each page from 1 to 11, whereas the 2014 document is paginated at the bottom each page from 222 to 232. The header of the first page of the 2013 PDF reads '*Zoological Journal of the Linnean Society*, 2013. With 3 figures', whereas that of the 2014 document reads '*Zoological Journal of the*

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Resolution of the type material of the Asian elephant, *Elephas maximus* Linnaeus, 1758 (Proboscidea, Elephantidae)

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The understanding of Earth's biodiversity depends critically on the accurate identification and nomenclature of species. Many species were described centuries ago, and in a surprising number of cases their nomenclature or type material remain unclear or inconsistent. A prime example is provided by *Elephas maximus*, one of the most iconic and well-known mammalian species, described and named by Linnaeus (1758) and today designating the Asian elephant. We used morphological, ancient DNA (aDNA), and high-throughput ancient proteomic analyses to demonstrate that a widely discussed syntype specimen of *E. maximus*, a complete foetus preserved in ethanol, is actually an African elephant, genus *Loxodonta*. We further discovered that an additional *E. maximus* syntype, mentioned in a description by John Ray (1693) cited by Linnaeus, has been preserved as an almost complete skeleton at the Natural History Museum of the University of Florence. Having confirmed its identity as an Asian elephant through both morphological and ancient DNA analyses, we designate this specimen as the lectotype of *E. maximus*.

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Fig.1. First page of the PDF of Cappellini et al. (2013), which has been accessible on the website of the *Zoological Journal of the Linnean Society* from 4 November 2013 to 14 January 2014. Downloaded on 13 November 2013.

Linnean Society, 2014, **170**, 222–232. With 3 figures'. The footers of the 11 pages of the 2013 PDF bear the mention '© 2013 The Linnean Society of London, *Zoological*

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Fig. 2. First page of the PDF of Cappellini et al. (2014), accessible on the website of the *Zoological Journal of the Linnean Society* since 14 January 2014. Downloaded on 27 October 2014.

Journal of the Linnean Society, 2013', whereas those of all pages of the 2014 document bear '© 2013 The Linnean Society of London, *Zoological Journal of the*

Linnean Society, 2014, **170**, 222–232'. Furthermore, as the numbering of the pages starts on an odd page (1) in the 2013 PDF and on an even page (222) in the 2014 document, the headers and footers of all pages shifted respectively from right to left and from left to right when the pages were renumbered in the 2014 publication. Altogether, these changes are 23 in number, so that it is clearly impossible to consider that these two documents are 'identical'. If nothing else, these changes demonstrate that the '*fixed layout*' provision of Article 8.1.3.2 has been breached. For the purposes of zoological nomenclature, these two PDFs therefore constitute two different works, having different publication dates.

It is true that the 2013 publication was registered on 10 October 2013 on Zoobank prior to its distribution online, and that it received an LSID for this registration. This would indeed have provided nomenclatural availability to this work if the latter had been issued '*for the purpose of providing a public and permanent scientific record*', but this was not the case. At the very time where the repaginated 2014 publication was released in January 2014, the original 2013 PDF was removed from the journal's website and it is not available there any more. Only those who have saved a PDF of this initial version on their personal computer now have access to it. Clearly this situation does not comply with the requirements of Article 8.1 regarding the public and permanent accessibility of a work for its nomenclatural availability. Although it is claimed to be the *same* document (as both bear the same DOI), the version published in January 2014 is a different document. This version seems indeed to have been produced with the intention of '*providing a public and permanent scientific record*', if not online (as the ZJLS website may at any time be discontinued for some reason and there can be no guarantee of long-term permanency of any electronic archive), at least in its printed form, a physical document that has been duly distributed and deposited in libraries worldwide. For these reasons, we regard the 2013 PDF as nomenclaturally unavailable, despite its having been registered in Zoobank. As for the 2014 PDF, it was not registered *as such* in Zoobank and this online publication is therefore not available as such, but the paper version of the journal, seemingly published at the same date (14 January 2014), provided nomenclatural availability to the lectotype designation through the traditional process of paper publication.

The Zoobank entry for this work (Figure 3) provides contradictory information. It mentions the publication date of 4 November 2013, which corresponds to the 2013 PDF, not included in an issue and paginated from page 1 to 11. But it cites the reference as Volume **170**, number 1, pages 222–232, a work which was only published on 14 January 2014 (a date that is not mentioned in this entry). The Zoobank registration meant to provide nomenclatural availability was effected before the publication date announced in this entry, on 10 October 2013. As at this date the numerals for the Volume, number and pages could not be known, this information could not be present in the original registration and had to be added subsequently, presumably on 14 January 2014, or later. Furthermore, although the Zoobank registration complies with the requirement of Article 8.5.3.1 to '*give the name and Internet address of an organization other than the publisher that is intended to permanently archive the work in a manner that preserves the content and layout, and is capable of doing so*', as of 15 November 2014 no PDF of this work was available at the archiving address given there (*PubMed Central*, [http://www.ncbi.nlm.nih.gov/

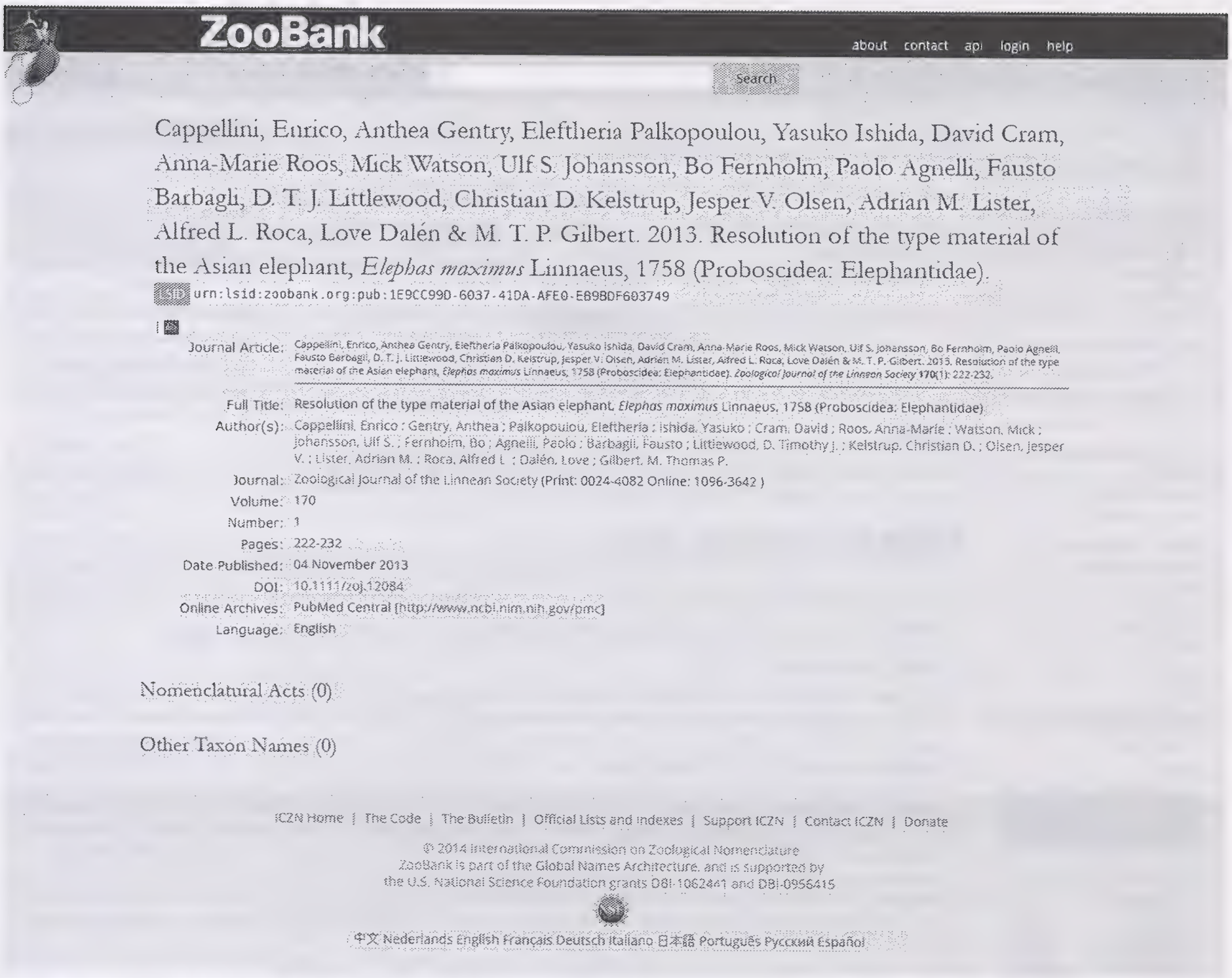

Fig. 3. Zoobank entry for the work of Cappellini et al. (2013). Downloaded on 28 October 2014.

pmc]; research carried out by us using journal and paper titles, authors and key words). Finally, this Zoobank entry also contains another inaccuracy, as it states '*Nomenclatural Acts (0)*', although this paper contained one such act, a lectotype designation, which was in fact the main purpose of this work! This is due to the fact that currently Zoobank does not allow for such a registration, which will be problematic: as long as it is the case, the information about such names and acts in Zoobank cannot be accurate and reliable.

The practice of 'Early View' is followed by ZJLS for all its accepted papers. Each Early View is announced as such on the website, with the following explanation: '*Online Version of Record published before inclusion in an issue*' (see one such example in Figure 4). Once the issue has been composed, paginated and published, the mention of the Early View is replaced in the entry by the detailed reference of the final version (see Figure 5), and the Early View is not accessible any more. For the reasons given above, we consider that all PDFs posted online by this journal ahead of print of the final paginated issue, and which later disappear definitively from the ZJLS website, are 'preliminary versions' of the latter as mentioned in Articles 9.9 and 21.8.3, and are therefore unavailable in zoological nomenclature. The new names and nomenclatural acts they may contain will become effective only with the paper publication of the final issue.

It could be questioned whether mere changes in the numbering of the pages and in the headers and footers of the pages are 'relevant changes', inasmuch as they do not

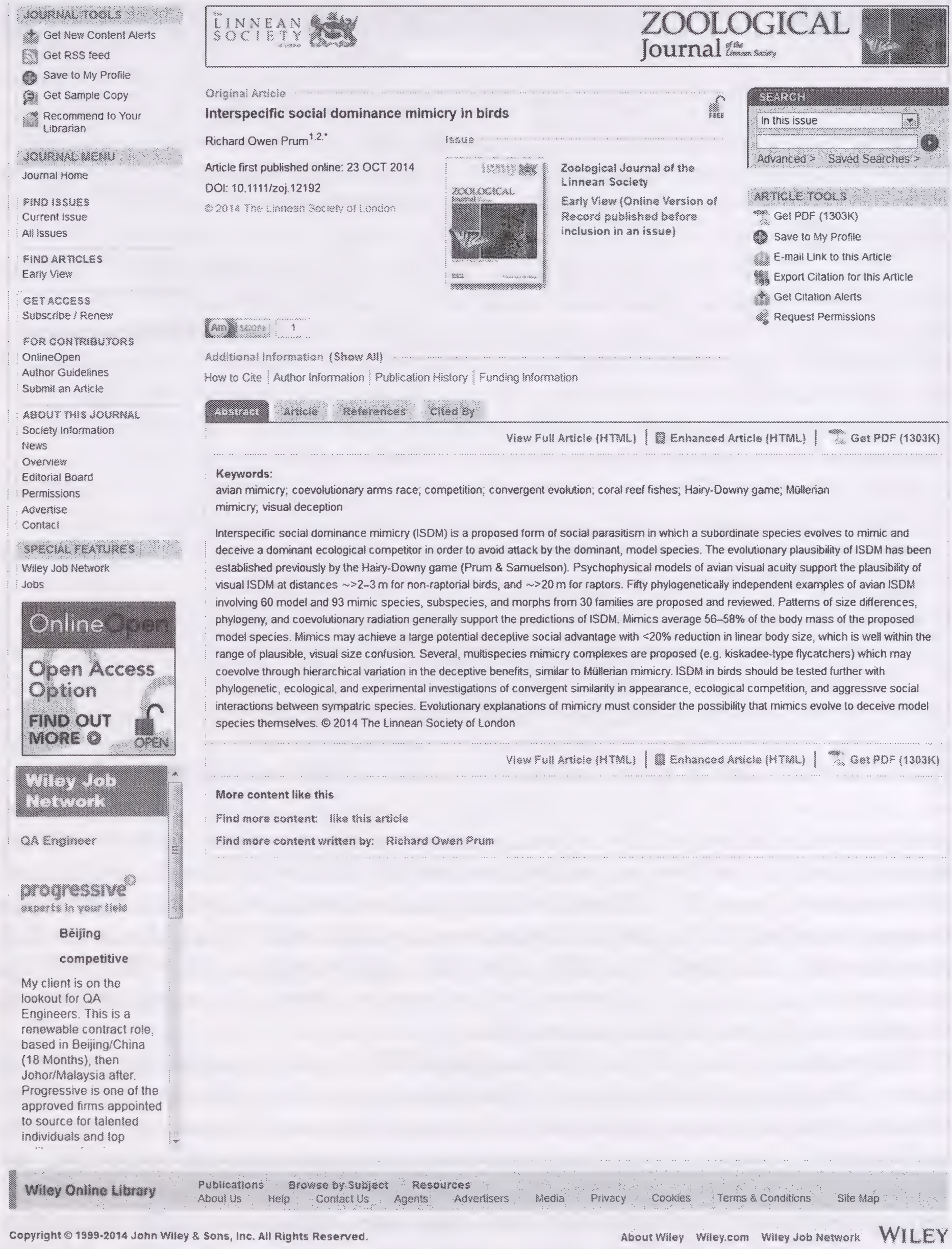

Fig. 4. An example of first page of 'Early View' of a work accessible online 'ahead of print' on the website of the *Zoological Journal of the Linnean Society*. Downloaded on 27 October 2014.

concern the text of the paper itself. They do, first because they will render subsequent mentions of page numbers inaccurate. It is a common practice in taxonomic papers, particularly in synonymic lists, to cite the first page of appearance of a new name or nomenclatural act in the publication where they appeared. If the work at stake

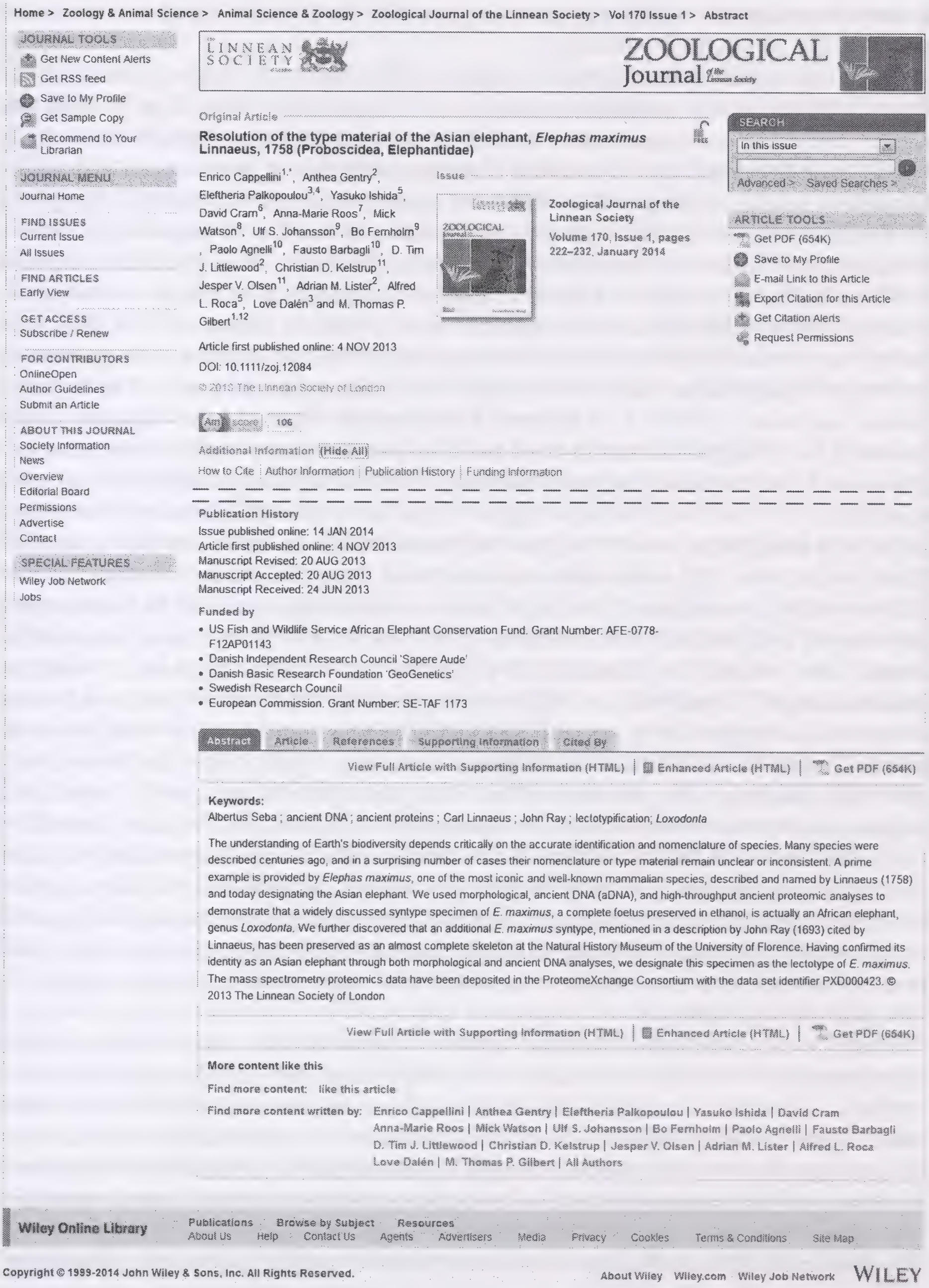

Fig. 5. Partial view of first page of the entry of Cappellini et al. (2014) accessible online on the website of the *Zoological Journal of the Linnean Society*. Downloaded on 27 October 2014.

contains many pages this is very useful, and it would be inappropriate to deprive taxonomists from this tool. In the present case, the formal designation of the

lectotype of *Elephas maximus* appears in page 9 of the 2013 preliminary version and on page 230 of the final publication.

More importantly, the presence of these modifications, although slight, precludes from considering the preliminary version as a document '*with fixed content and layout*' and therefore excludes this version from nomenclatural availability. Nobody should have the possibility to decide if a change in a paper is 'relevant' or 'important' enough to qualify a document as 'different' from another in this respect. Except for its Recommendations, which are only guidelines and not Rules, the Code is a set of Principles and Rules that must be followed, and Article 8.1 should be simply applied in all cases. As stated above, a single change of a single letter in a paper is enough to qualify the early document as unavailable. Such a minute change of one letter may have relevant, and sometimes important (e.g. regarding homonymy), consequences in zoological nomenclature when it concerns the spelling of a new name. The zootaxonomic literature is full of ill-formed names which their proper authors would certainly have wished to change after publication, for example after comments and criticisms by colleagues. If the possibility was open for authors to modify the 'original spelling' of an ill-formed name as appearing in an online preliminary version of a paper, the temptation would be great for some authors to do so, in the expectation or hope that, once this version has been retracted from the journal's website, no one will remember or mention it. No need to say, such practices would be considerably detrimental to zoological nomenclature, as of course in many cases some taxonomists would have noticed the change, and problems and endless discussions would no doubt follow. To avoid this, a single and simple Rule must be followed in all cases: whenever the original version published ahead of print, and later retracted from the journal's website, turns out to be different, even very slightly, from the final version that will remain on the website, or from the paper printed version if it exists, the original online document must be considered a preliminary version, devoid of nomenclatural availability, and the latter should shift to the final version, therefore at a later date. Of course, in order to be able to compare both versions, someone must have had access to both, which may not be the case for some works dealing with poorly studied groups, which may not have been downloaded during the 'Early View' period, so that a special responsibility here rests upon publishers, who should be aware of this problem.

There is no practical difference between Dubois et al.' and Gentry et al.'s interpretations of the present case, as in both cases the lectotype designation is available, whether dated 2013 or 2014. But the situation may be different in other cases, whenever there exists a competition between two nomenclatural acts, names or spellings. The new Rules concerning the nomenclatural availability of 'electronic publications' introduced by the 2012 Amendment are quite precise and constraining. They were promulgated and published in order to allow distinction between any document that can be found on the web and a proper 'electronic publication'. Contrary to the previous Rules concerning paper publications, they require recourse to external evidence, not present in the publication itself, which is quite problematic and unusual in zoological nomenclature. It is therefore important to clarify as soon as possible which interpretation respecting the Code should be adopted in such situations, in order to avoid subsequent repetitive misinterpretations and problems and the instauration of a chaotic situation in this domain, with

several competing interpretations being followed by different taxonomists, like in the present case.

We want to stress that there exist three very simple solutions to the problem discussed here, two of which apply even in journals which publish 'ahead of print' online versions of their papers.

The first one consists in publishing the online document and the paper-printed one exactly on the same date, and caring for the original online document not ever being modified subsequently. This was, for example, the practice of the journal *Zootaxa* until the end of 2012 and this is still the practice of its sister journal *Bionomina* (not '*Bionimina*') – so that there exists in fact no 'preview' of the latter as stated by Gentry et al. (2014). This practice eliminates any possible subsequent discussion about the availability and publication date of a paper dealing with nomenclatural matters, as, irrespective of the Zoobank registration, the nomenclatural availability is provided by the paper version as it has been for 250 years.

The second solution applies to journals that have adopted the practice of 'ahead of print' online publication. It consists in using the exactly same document for the first online publication of the isolated paper and for its final publication as part of a Volume and issue, either simply online or both online and on paper. This course has already been followed by some taxonomic journals such as *Zootaxa* since the beginning of 2013: the paper version appears after the electronic one, but is exactly identical to it in content and layout. Of course, for this to be possible, the content, pagination and layout of each paper must be fixed from the start and not changed later. The order of the papers in each issue and the numbering of their pages must therefore be strictly chronological, following the order of acceptance, edition and distribution of the papers. We suggest that online journals which do or might, at least from time to time, publish papers having nomenclatural implications, should adopt such an editorial policy. Such journals could even agree to share a common 'label' to point to their respect of the latter. However, although this practice is quite easy for journals with flexible numbers of pages and articles per issue, it is difficult for journals having fixed number of pages per issue, for which pagination may remain provisional for months: such journals might consider the third solution suggested below.

The third practice would involve including in preliminary online early views of publications disclaimers following Article 8.2 and Recommendation 8G, stating that these previews are not published in the meaning of the Code. Such a practice would allow to identify with certainty the date when the editor considers the paper to be published with its final and permanent content and layout.

As discussed in detail by Dubois et al. (2013), the possibility now offered by the Code to publish new names and nomenclatural acts online raises many questions and is prone to create various problems in zoological nomenclature. We think that the new Rules introduced in the 2012 Amendment will have to be improved in several respects to solve these problems. We suggest that two guidelines should preside to the elaboration of these improvements. The first one would be to devise a system in which all the information relevant for ascertaining whether an online published work is nomenclaturally available should be found *within* the online document itself, without any need of recourse to *external* evidence. The second would be the formal recognition in the Code of the '*Principle of Nomenclatural Foundation*' (Dubois, 2011, 2013) according to which, except in a very limited number of situations, the

nomenclatural status of a name or of a nomenclatural act is fixed once and for all in the original publication where it is introduced, and cannot be modified by the subsequent actions of individual zoologists, editors or publishers, but only by the Commission acting under its Plenary Powers. This should also apply to Zoobank entries for new names and nomenclatural acts, which should be exhaustive, registered before the publication itself and definitive (not be liable to be modified subsequently). This very sound 'untold Principle' has always in fact been respected 'surreptitiously' in all editions of the Code and should not be challenged because of the incorporation of online publications into the Code.

In conclusion, we propose the following formal definition of '*preliminary version*', for inclusion in the Glossary of the Code:

'***Preliminary version of a publication***. *Any version of a work published online and which differs, even slightly (by even a single-letter or a single modified element of layout), in content and/or layout from the final version of the same work subsequently published online. A preliminary version is accessible online only during a limited period, before being definitively replaced by the final version, which then remains unchanged.*'

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Appendix 1

Gentry et al. (2014) stated that Dubois et al. (2014) '*have demonstrated misunderstanding or ignorance of* a number of aspects *[emphasized by us] of the* International Code of Zoological Nomenclature', but all aspects of their comments beside that discussed above are simply a matter of personal *opinions*, not of Code-compliance. It is the right of Gentry et al. (2014) to prefer having a type-specimen of uncertain origin rather than one coming with certainty from the island of Ceylon, but it is also the right of other authors to think differently. Even if today *Elephas maximus* is considered a monotypic species in many checklists, some authors recognize three subspecies, respectively in Sri Lanka, in mainland Asia and in Sumatra (Shoshani, 2005, p. 90), and the possibility cannot be discarded that future studies might result in their confirmation as valid taxa '*or even in the recognition of several species*', which suggests that '*it would be better to keep the nomen* maximus *attached to the Ceylonese taxon*' (Dubois et al., 2014, p. 53). This could have been done simply by the designation as virtual lectotype (i.e. a specimen referred to in the original description but not available anymore nowadays) for the taxon of a specimen of undisputable Ceylonese origin. Contrary to what Gentry et al. (2014) stated, the designation of a recent neotype, which they considered difficult because of the unavailability of specimens, is not indispensable today to stabilise the nomenclatural situation, as long as only one taxon of elephant is recognized, but would be required '*if in the future the species* Elephas maximus *happened to be convincingly stated to consist of several subspecies or species.*' (Dubois et al., 2014, p. 57).

It is striking to note that there has been a change in the 'certainty' of the origin of the Florence specimen designated by Cappellini et al. (2014) as lectotype. Cappellini et al. (2014, p. 230) had written: '*Thus, further resolution of the specimen's geographical origin was not possible with current molecular data, but for nomenclatural stability, the type locality of* E. maximus *should continue to be understood to be the island of Ceylon ('Zeylonae' of Linnaeus, 1758).*' In contrast, Gentry et al. (2014, p. 3) wrote: '*It is as certain as anything can be from the written records of the past that the elephant in the Natural History Museum of the University of Florence, now the* Elephas maximus *lectotype, came from Sri Lanka.*' The two sentences cannot be considered equivalent. Dubois et al. (2014) did not deny the likelihood that this specimen was an Asian elephant, they simply suggested that another specimen, cited in one of the works mentioned in Linnaeus's (1758) original description, a work which was the only basis for the traditional recognition of Sri Lanka as the type locality of the species, would have been a better choice. They suggested a specimen which was of doubtless Ceylonese origin, even if it was a captive elephant, as in 1702 the king of Kandy would certainly not have brought it from the continent. Contrary to Gentry et al.'s (2014) suggestion that Recommendation 75A is so to say

'compelling', Recommendations of the Code are not Rules but simply guidelines that can be followed or not according to the situation, and some current Recommendations are indeed quite questionable (see e.g. Dubois, 2011, p. 47).

Contrary to the statement of Gentry et al. (2014), Dubois et al. (2014) did not '*set up their own system of three categories of syntype*'. They simply stated that it is fully Code-compliant to designate as lectotype of a nominal taxon a syntype which had not been examined personally by the author of the taxon and which is currently missing. The split of syntypes into primary, secondary and tertiary ones has only a didactic function and implies no intent of creating a '*new system*'. All these specimens are syntypes under the Code, but those listed as secondary or tertiary syntypes are often ignored by some modern taxonomists, although in some cases they represent better choices for a lectotype designation, in particular when they offer a more precise type-locality. Dubois et al. (2014) cited several examples in the literature to illustrate this point.

Beside a few other bitter comments which are irrelevant to this discussion (such as how to cite the Code or the use of a precise, technical terminology in zoological nomenclature, matters which have been discussed at length elsewhere), the only point on which Gentry et al. (2014) challenged Dubois et al.'s (2014) interpretation of the Rules (not Recommendations) of the Code is the availability of the 2013 PDF of Cappellini et al., and this deserves a serious discussion, provided above.

Note added in proofs

On 6 February 2015, we received from the Commission Secretariat the proofs of this paper, as well as the unpublished manuscript of Frank Krell which appears below in the same issue of this *Bulletin*. Therefore, whereas Krell had received our manuscript, as a referee, on 25 November 2014, before submitting his own, the reverse was not true and we could not discuss his manuscript in our paper. We disagree with Krell's interpretations and proposals, and we stick to our analysis above. As time and space do not allow to do it in the present issue, we will submit a reply to Krell for publication in the BZN.